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THE PEDAGOGICAL IMPACT OF MACHINE TRANSLATION AND POST-EDITING ON EFL STUDENTS' WRITTEN TRANSLATION COMPETENCE

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ABSTRACT

This study aims to examine the pedagogical impact of machine translation (MT) tools, particularly Google Translate, on the development of students' written translation skills. Employing a qualitative case study design, the research involved ten English Literature students at Universitas Negeri Medan. Data were collected through translation tasks, classroom observations, and in-depth semi-structured interviews. Quantitative evidence from pre-test and post-test assessments revealed a substantial improvement in students' translation performance, with average scores increasing from 51% to 80% following the integration of MT-assisted translation and guided post-editing activities. Qualitative findings indicate that students primarily used MT as an initial drafting tool and developed greater linguistic awareness through post-editing, particularly in addressing grammatical accuracy, idiomatic expressions, and contextual meaning. The findings suggest that MT, when implemented within a pedagogically guided framework, can function as an effective learning scaffold rather than a replacement for human translation competence. This study offers practical insights for educators on integrating MT and post-editing strategies into translation instruction to promote learner autonomy and critical language awareness.

Keywords: English writing, Machine translation, post-editing, translation skills, translation pedagogy

INTRODUCTION

The integration of machine translation (MT) tools into translation pedagogy has become increasingly prominent in English as a Foreign Language (EFL) higher education context, particularly among English Literature students who frequently engage with both literary and academic texts. Advances in artificial intelligence and natural language processing have significantly improved the fluency and grammatical accuracy of MT outputs, positioning tools such as Google Translate as readily accessible resources in students' translation practices. However, despite their widespread use, questions remain regarding how MT influences students' translation competence, critical language awareness, and reliance on automated systems when producing written translations.

AI technologies have demonstrated capabilities that enable them to replicate human linguistic patterns to generate fluent and grammatically correct translations. This

progression positions machine translation as a viable, albeit contentious, tool for literary translation, raising important questions regarding both its potential benefits and limitations (Kasperę et al., 2021; Li, 2024; Omar & Gomaa, 2020). One key phenomenon in this context is the emergence of "MT natives," or students who have been trained in translation techniques alongside the proliferation of machine translation tools. These students often demonstrate a keen awareness of MT technologies and their implications in translation practice, cumulative knowledge, and perceived reliability as translation aids (Aslan, 2023; Şahin & Gürses, 2021). Many students use MT primarily to enhance productivity by offering quick preliminary translations, which can then be refined through manual edits. This hybrid approach allows them to utilize the efficiency of machine translation while preserving the artistic quality of the literary text through human oversight (Agustine & Permatasari, 2021; Toral et al., 2023). Four machine translation platforms are widely used by Google users in Indonesia, with Google Translate being the most well-known globally. Developed by Google, this tool supports over 100 languages, including several regional languages spoken in Indonesia. As an automated translation machine, Google Translate often yields results that are not completely precise. In common, translation involves the act of transferring meaning or messages from a source language into a target language (Mar'athus Sholikhah & Indah, 2021).

However, the perceived quality of MT outputs remains a contentious subject among students and educators. Critics argue that machine translations, particularly of literary works, can lack the nuanced understanding required for conveying subtleties, cultural references, and emotional tones inherent in human language (Omar & Gomaa, 2020). Past studies reveal mixed results regarding the fidelity of MT to the source text, and concerns have been raised about the potential loss of the translator's voice in works produced through MT (Kenny & Winters, 2020; Macías et al., 2020). Studies have shown that while students recognize the efficiencies afforded by MT, such as time-saving aspects and ease of use, they maintain critical viewpoints regarding its limitations. For example, a significant portion of students maintain that the literary translation process remains fundamentally human-driven (Aslan, 2023). This interplay between machine-driven processes and human creativity suggests a future where literary translation may increasingly rely on machine assistance, but always complemented by thoughtful human engagement to meet the idiosyncrasies of the literary realm (Jun, 2023).

Although previous studies have examined students' perceptions of machine translation and the accuracy of MT outputs, most research has focused either on attitudes toward MT or on error analysis of translated texts. Limited attention has been given to how MT use, combined with structured post-editing activities, contributes to measurable improvement in students' translation competence. Moreover, empirical studies integrating qualitative insights with pre-test and post-test performance data in EFL translation classrooms remain scarce. Addressing this gap, the present study bridges perception-based research and performance-based evidence by examining both the learning outcomes and cognitive processes involved in MT-assisted translation practices.

METHOD

The current study employed a qualitative research design using a case study approach to explore the translation processes of ten English literature students. A qualitative approach that involves an empirical exploration of a contemporary issue within its natural setting, utilizing multiple forms of evidence to ensure contextual depth and validity (Pusparini et al., 2020). This methodology was selected because it provides an in-depth examination of participants' experiences and practices, and it is particularly valuable when the aim is to understand complex phenomena from multiple perspectives. The participants consisted of ten English literature students at Universitas Negeri Medan during the 2024/2025 academic year, specifically in March 2025. The experimental phase lasted for two weeks. Data analysis followed Braun and Clarke's six-step thematic analysis framework, consisting of familiarization with the data, initial coding, theme generation, theme review, theme definition, and reporting. Interview transcripts, observation notes, and students' translation outputs were coded inductively to identify recurring patterns related to MT use, post-editing strategies, and translation awareness. Purposive sampling was selected to ensure that participants possessed sufficient exposure to translation tasks and MT tools, enabling in-depth exploration of informed translation practices rather than surface-level usage.

Procedure and Data Analysis

Data were analyzed using thematic analysis following the six-step framework proposed by Braun and Clarke (2006). This approach was selected because it provides a systematic yet flexible method for identifying, analyzing, and reporting patterns within qualitative data, making it particularly suitable for exploring students' experiences and learning processes in MT-assisted translation.

Phase 1: Familiarization with the Data

The analysis began with data familiarization. All interview recordings were transcribed verbatim, while classroom observations were compiled into detailed field notes. Students' translation tasks, including original translations and post-edited versions, were also collected and reviewed. The researcher repeatedly read the transcripts, observation notes, and translation outputs to gain an overall understanding of students' interactions with machine translation tools and their post-editing practices. Initial notes were taken to capture early impressions related to MT usage, translation difficulties, and learning behaviors.

Phase 2: Generating Initial Codes

In the second phase, initial codes were generated inductively from the data without imposing predetermined categories. Coding focused on meaningful units of data that reflected students' translation behaviors and perceptions, such as using MT for initial drafting, identifying literal translation errors, editing for naturalness, and awareness of cultural meaning. Coding was conducted manually by systematically highlighting relevant excerpts across all data sources. Similar codes emerging from interviews, observations, and translation tasks were compared to ensure consistency and triangulation.

Phase 3: Searching for Themes

Next, the initial codes were examined and grouped into broader potential themes based on conceptual similarity. For example, codes related to efficiency, time-saving, and initial comprehension were clustered under a tentative theme of functional use of machine translation, while codes related to error detection and revision strategies were grouped under engagement in post-editing. This phase involved organizing codes into thematic maps to explore relationships between patterns across the dataset.

Phase 4: Reviewing Themes

The preliminary themes were then reviewed and refined to ensure internal coherence and clear distinctions between themes. Each theme was checked against the original data to confirm that it accurately represented participants' experiences. Some themes were merged, refined, or discarded when insufficient supporting data were found. This iterative process ensured that the final themes were robust, meaningful, and aligned with the research objectives.

Phase 5: Defining and Naming Themes

In this phase, each theme was clearly defined and named to reflect its core meaning and pedagogical relevance. The final themes included: functional use of machine translation as a learning aid, growing awareness of MT limitations, post-editing as a learning strategy, development of critical translation awareness, and increased confidence and learner autonomy. Detailed definitions were developed for each theme, specifying how they contributed to students' translation skill development.

Phase 6: Producing the Report

Finally, the themes were integrated into the findings and discussion sections. Representative excerpts from interviews and observations were selected to illustrate each theme, while evidence from translation task performance and pre-test/post-test results was used to support qualitative interpretations. The analysis connected students' experiential data with pedagogical implications, demonstrating how MT-assisted translation and post-editing fostered linguistic awareness, accuracy, and autonomy.

FINDINGS AND DISCUSSION

The findings of this study are drawn from two primary sources of data: the results of pre-test and post-test multiple-choice assessments, and qualitative insights obtained through interviews, observations, and translation task reflections. Together, these sources offer a comprehensive understanding of the impact of using machine translation (MT) tools, particularly Google Translate, on English Literature students' translation skills. The results from the pre-test and post-test assessments indicate a significant improvement in students' translation performance following the integration of machine translation (MT) tools combined with post-editing activities. On the pre-test, which required students to answer 10 multiple-choice questions without any assistance, the average score was 51%, demonstrating moderate familiarity with idiomatic expressions, contextual meanings, and stylistic accuracy in translation. In contrast, the post-test, conducted after students had used MT tools and practiced post-editing, yielded a considerably higher average score of 80%, with most participants scoring between 70% and 90%.

The average score gains of 29% suggests that the use of MT, when followed by reflective revision and post-editing, contributed meaningfully to the enhancement of students' translation skills. Notably, participants who had lower pre-test scores showed the most significant improvements, indicating that MT can serve as an effective scaffold for learners who initially struggle with literal and idiomatic translation. Moreover, students became more critical of MT outputs, identifying common errors and making stylistic adjustments, which in turn improved their linguistic awareness and overall translation competence. These results support the conclusion that machine translation, when used as a guided educational tool, can positively impact translation learning outcomes, particularly when combined with active post-editing and instructor feedback.

Table 1
Comparison of Students' Pre-Test and Post-Test Translation Scores

Participant	Pre-Test Score (Raw)	Pre-Test (%)	Post-Test Score (Raw)	Post-Test (%)	Score Gain (%)
P1	5	50%	8	80%	+30%
P2	4	40%	7	70%	+30%
P3	6	60%	9	90%	+30%
P4	7	70%	9	90%	+20%
P5	5	50%	8	80%	+30%
P6	4	40%	7	70%	+30%
P7	6	60%	9	90%	+30%
P8	5	50%	8	80%	+30%
P9	3	30%	6	60%	+30%
P10	6	60%	9	90%	+30%

• Average Pre-Test Score: 5.1 (51%)
• Average Post-Test Score: 8.0 (80%)
• Average Score Gain: +29%)

Thematic analysis of interview transcripts, student reflections, and observation notes revealed several recurring themes related to students' experiences with machine translation (MT) tools and their impact on translation skill development.
The following key themes emerged:

1. Functional Use of Machine Translation as a Learning Aid

Most students reported using MT tools, particularly Google Translate, as a quick reference for understanding unfamiliar words and sentence structures. They emphasized that MT helped them complete initial drafts more efficiently.
"When I don't understand a sentence, I use Google Translate first just to get the idea." (P3)
"It saves time, especially when I have to read long academic texts." (P7)

2. Growing Awareness of MT Limitations

Participants identified common issues in MT output, including grammatical inconsistencies, literal translation of idioms, and loss of cultural or emotional nuance. This awareness often emerged after comparing MT results to their own revised versions.
"It translates literally, like 'break the ice' becomes 'memecahkan es' which sounds strange in Indonesian." (P1)
"Sometimes it changes the meaning completely, especially in poetry." (P5)

3. Engagement in Post-Editing as a Learning Strategy

Post-editing emerged as a central activity that enhanced students' attention to grammatical structure, word choice, and contextual accuracy. Students expressed that the process helped them reflect on and revise their understanding of both languages.

"I usually edit the sentence so it sounds more natural in Bahasa." (P4)

"Editing helps me understand the difference between English structure and Indonesian grammar." (P8)

4. Development of Critical Translation Awareness

Students showed improved ability to identify translation problems and consider multiple versions of a sentence. Several began to consult dictionaries or peers to verify the MT result rather than relying on it blindly.

"Now I always check if the translation sounds right before I submit." (P2)

"I use MT, but I treat it like a draft. It's not the final version." (P9)

5. Increased Confidence and Autonomy

By using MT tools critically, students reported increased confidence in approaching translation assignments. They described becoming more independent in solving translation challenges, with less dependence on lecturers or peers.

"Before, I always asked my friend to help. Now I try to edit it myself first." (P6)

"I feel more confident because I know how to spot the errors." (P10)

Machine translation tools served not only as support for basic comprehension but also as a pedagogical gateway to more reflective translation practices. The integration of post-editing activities was found to be instrumental in developing students' linguistic awareness, editing strategies, and translation accuracy. Overall, the qualitative data suggest that MT, when used critically, can enhance students' autonomy and translation competence in English literature contexts.

The observed improvement in translation scores is consistent with previous studies emphasizing the pedagogical value of post-editing in MT-assisted translation learning (Aslan, 2023; Omar & Gomaa, 2020). Similar to earlier findings, students in this study demonstrated increased critical awareness of MT limitations, particularly regarding idiomatic and culturally nuanced expressions. However, this study extends prior research by providing empirical classroom-based evidence that combines performance data with qualitative insights, reinforcing the role of MT as a learning scaffold rather than a shortcut. From a pedagogical perspective, educators are encouraged to integrate MT tools into translation instruction through guided activities such as comparative analysis, error identification, and reflective post-editing tasks. Rather than prohibiting MT use, instructors can design classroom activities that require students to critically evaluate MT outputs, justify revisions, and reflect on linguistic choices, thereby fostering deeper translation competence and learner autonomy.

CONCLUSION

This study examined the pedagogical impact of machine translation (MT), particularly Google Translate, on the development of students' written translation skills within an English Literature context. By integrating MT-assisted translation with guided post-editing activities, the research provides empirical evidence of how digital translation tools can support learning when used critically and pedagogically. The

findings demonstrate a substantial improvement in students' translation performance, as reflected in the increase of average scores from the pre-test to the post-test. This improvement suggests that MT, when combined with reflective post-editing, can function as an effective instructional scaffold that enhances translation accuracy, linguistic awareness, and contextual sensitivity. Rather than relying passively on automated outputs, students increasingly engaged in evaluative and corrective practices, indicating a shift from surface-level translation to more deliberate and informed decision-making. Qualitative insights further reveal that students developed greater awareness of the limitations of MT, particularly in relation to idiomatic expressions, cultural nuances, and stylistic appropriateness. Through post-editing, learners refined their understanding of source–target language differences and strengthened their ability to produce natural and contextually appropriate translations. Importantly, the integration of MT tools also fostered increased learner confidence and autonomy, enabling students to approach translation tasks with greater independence and critical awareness.

From a pedagogical perspective, the study highlights the importance of repositioning machine translation in translation instruction, not as a shortcut or replacement for human expertise, but as a learning resource that can stimulate critical engagement and skill development. Educators are encouraged to design structured activities that guide students in evaluating, revising, and reflecting on MT outputs, thereby transforming MT use into a meaningful learning process.

Despite these contributions, the study is limited by its small sample size and short intervention period, which may restrict the generalizability of the findings. Future research could involve larger and more diverse participant groups, compare multiple MT platforms, or employ longitudinal designs to examine the sustained impact of MT-assisted translation on students' academic and professional translation competence. In conclusion, when embedded within a well-structured pedagogical framework, machine translation and post-editing can play a constructive role in enhancing students' translation skills, critical language awareness, and learner autonomy in higher education contexts.

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